

Geology and tectono-metamorphic history of the Himalayan metamorphic core: insights from the Alaknanda-Dhauliganga valleys (NW India)

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In the Alaknanda-Dhauliganga valleys (Garhwal Himalaya, NW India) a nearly complete crustal- structural section of the Himalaya crops out (Jain et al., 2014). In this contribution we present field observations, as well as, microstructural, petrological and geochronological data from the Lesser Himalayan Sequences up to the Tethyan Himalayan Sequence from this area.

The pressure-temperature-deformation-time history (i.e. the P-T-d-t path) of selected samples from the Main Central Thrust zone (MCTz) and the up to ductile-sheared portion of the South Tibetan Detachment System (STDS) has been reconstructed with the aid of equilibrium assemblage diagrams, coupled with multi-equilibrium and trace-element based thermobarometry after detailed electron microprobe analytical work and microstructural analysis have been performed.

U-Th-Pb *in situ* monazite geochronology from selected samples of key-structural positions (MCTZ up to STDS) allowed us to put an absolute temporal constraint both on the prograde metamorphic history and on the exhumation-related overprint. These data, joined with the geological literature (e.g. Thakur et al., 2015; Hunter et al., 2018), shed light on the tectono-metamorphic evolution of the Himalayan metamorphic core in this portion of the belt. Moreover, these new P-T-d-t paths could be quite well compared with data from other portions of the belt located in Central and Central-Western Nepal (e.g. Iaccarino et al., 2017), since the same approach was followed.

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